CLAIMS

What is claimed is:

1. A seed crystal consisting of a silicon carbide single crystal, comprising:

a single crystal growing face inclined at an angle ranging from 3 degrees or more to 60 degrees or less with respect to the (11-20) face to a direction inclined at an angle ranging from -45 degrees or more to 45 degrees or less from a <0001> direction to the [1-100] direction.

2. The seed crystal according to claim 1, wherein said <0001> direction is the [0001] Si direction.

3. The seed crystal according to claim 1, wherein said single crystal growing face is inclined at an angle ranging from 3 degrees or more to 30 degrees or less with respect to said (11-20) face.

4. The seed crystal according to claim 2, wherein said single crystal growing face is inclined at an angle ranging from 3 degrees or more to 30 degrees or less with respect to said (11-20) face.

5. The seed crystal according to claim 1, wherein said single crystal growing face is inclined at an angle ranging from 6 degrees or more to 30 degrees or less with respect to said (11-20) face.

6. The seed crystal according to claim 2, wherein said single crystal growing face is inclined at an angle ranging from 6 degrees or more to 30

degrees or less with respect to said (11-20) face.

7. The seed crystal according to claim 1, wherein said <0001> direction is the [000-1] C direction.

8. The seed crystal according to claim 7, wherein said single crystal growing face is inclined at an angle ranging from 3 degrees or more to 30 degrees or less with respect to said (11-20) face.

9. The seed crystal according to claim 7, wherein said single crystal growing face is inclined at an angle ranging from 6 degrees or more to 30 degrees or less with respect to said (11-20) face.

10. A single crystal substrate consisting of a silicon carbide single crystal, comprising:

an epitaxial growing face inclined at an angle ranging from 3 degrees or more to 60 degrees or less with respect to the (11-20) face to a direction inclined at an angle ranging from -45 degrees or more to 45 degrees or less from a <0001> direction to the [1-100] direction.

11. The single crystal substrate according to claim 10, wherein said <0001> direction is the [0001] Si direction.

12. The single crystal substrate according to claim 10, wherein said epitaxial growing face is inclined at an angle ranging from 3 degrees or more to 30 degrees or less with respect to said (11-20) face.

13. The single crystal substrate according to

claim 11, wherein said epitaxial growing face is inclined at an angle ranging from 3 degrees or more to 30 degrees or less with respect to said (11-20) face.

14. The single crystal substrate according to claim 10, wherein said epitaxial growing face is inclined at an angle ranging from 6 degrees or more to 30 degrees or less with respect to said (11-20) face.

15. The single crystal substrate according to claim 11, wherein said epitaxial growing face is inclined at an angle ranging from 6 degrees or more to 30 degrees or less with respect to said (11-20) face.

16. The single crystal substrate according to claim 10, wherein said <0001> direction is the [000-1] C direction.

17. The single crystal substrate according to claim 16, wherein said epitaxial growing face is inclined at an angle ranging from 3 degrees or more to 30 degrees or less with respect to said (11-20) face.

18. The single crystal substrate according to claim 16, wherein said epitaxial growing face is inclined at an angle ranging from 6 degrees or more to 30 degrees or less with respect to said (11-20) face.

19. A method of producing a silicon carbide single crystal ingot, comprising the steps of:

obtaining a seed crystal consisting of a silicon carbide single crystal and having a single crystal growing face inclined at an angle ranging from 3 degrees or more to 60 degrees or less with respect to the (11-20) face to a direction inclined at an angle ranging from -45 degrees or more to 45 degrees or less from a <0001> direction to the [1-100] direction; and

allowing to grow a silicon carbide single crystal by a sublimation recrystallization method on said single crystal growing face of said seed crystal.

20. The method of producing a silicon carbide single crystal ingot according to claim 19, wherein the [0001] Si direction is selected as said <0001> direction in the step of obtaining said seed crystal.

21. The method of producing the silicon carbide single crystal ingot according to claim 19, wherein the [000-1] C direction is selected as said <0001> direction in the step of obtaining said seed crystal.

22. A silicon carbide single crystal ingot,

being produced by a method according to claim 19, and a diameter thereof is 20 mm or more.

23. A silicon carbide single crystal ingot,

being produced by a method according to claim 20, and a diameter thereof is 20 mm or more.

24. A silicon carbide single crystal ingot,

being produced by a method according to claim 21, and a diameter thereof is 20 mm or more.

25. A silicon carbide single crystal wafer,

being produced by processing and polishing the silicon carbide single crystal ingot according to claim 22, and a diameter thereof is 20 mm or more.

26. A silicon carbide single crystal wafer,

being produced by processing and polishing the silicon carbide single crystal ingot according to claim 23, and a diameter thereof is 20 mm or more.

27. A silicon carbide single crystal wafer,

being produced by processing and polishing the silicon carbide single crystal ingot according to claim 24, and a diameter thereof is 20 mm or more.

28. A silicon carbide single crystal epitaxial substrate, comprising:

the silicon carbide single crystal wafer according to claim 25; and

a silicon carbide single crystal epitaxial film having grown on said silicon carbide single crystal wafer.

29. A silicon carbide single crystal epitaxial substrate, comprising:

the silicon carbide single crystal wafer according to claim 26; and

a silicon carbide single crystal epitaxial film having grown on said silicon carbide single crystal wafer.

30. A silicon carbide single crystal epitaxial substrate, comprising:

the silicon carbide single crystal wafer according to claim 27; and

a silicon carbide single crystal epitaxial film having grown on said silicon carbide single crystal wafer.

31. A method of producing a silicon carbide single crystal epitaxial substrate, comprising the steps of:

obtaining a substrate consisting of a silicon carbide single crystal and having a single crystal growing face inclined at an angle ranging from 3 degrees or more to 60 degrees or less with respect to the (11-20) face to a direction inclined at an angle ranging from -45 degrees or more to 45 degrees or less from a <0001> direction to the [1-100] direction; and

allowing to grow a silicon carbide single crystal epitaxial film on said single crystal growing face of said substrate.

32. The method of producing the silicon carbide single crystal epitaxial substrate according to claim 31, wherein the [0001] Si direction is selected as said <0001> direction in the step of obtaining said substrate.

33. The method of producing the silicon carbide single crystal epitaxial substrate according to claim 31, wherein the [000-1] C direction is selected as said <0001> direction in the step of obtaining said substrate.

34. A silicon carbide single crystal epitaxial substrate,

being produced by a method according to claim 31, and a diameter thereof is 20 mm or more.

35. A silicon carbide single crystal epitaxial substrate,

being produced by a method according to claim 32, and a diameter thereof is 20 mm or more.

36. A silicon carbide single crystal epitaxial substrate,

being produced by a method according to claim 33, and a diameter thereof is 20 mm or more.